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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/003,329	10/31/2001	Wei Xiong	M-12237 US	5270

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EXAMINER

TUCKER, WESLEY J

ART UNIT PAPER NUMBER

2624

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/003,329	XIONG, WEI	
	Examiner	Art Unit	
	Wes Tucker	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9,10,12-35,37-43,45-54 and 57-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7,9,10,12-19,26-35,37-43,45-54 and 57-62 is/are allowed.
- 6) ☒ Claim(s) 20-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>5-12-06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's response filed May 8th 2006 has been entered and made of record.
2. Applicant has amended claims 1, 3-7, 9-10, 12-17, 20, 22-23, 25-26, 28-35, 37-39, 41-43, 45, 47-48, 50-54, 57 and 59-60. Claims 8, 11, 36, 44 and 55-56 have been cancelled. New claims 61-53 have been added. Claims 1-7, 9-10, 12-35, 37-43, 45-54 and 57-62 are now pending.
3. Applicant's remarks in view of the extensive amendments have been entered and fully considered. Applicant's remarks are at least partially persuasive with regard to independent claims 1, 26, 41 and 48. Claims 1, 26, 41 and 48 are found to be allowable and reasons for allowance are given below. However independent claim 20 and subsequent dependent claims 21-25 still remain rejected with response also given below.
4. With regard to Applicant's arguments about claim 20, the term "connecting" here is interpreted reasonably and fairly broadly, especially in the absence of any recited motion trajectory being plotted. Claim 20 only calls for the plotting of tracked positions which is disclosed in Van der Wal's figures 2a-2d. The first and third positions are considered to be "connected" by both being connected to the second position, and the ideal positions are also considered to lie on said "connection." The points are considered "connected" in that they are all used to determine relative

placement to one another. It should be noted that no trajectory or even a traced line is recited in the claim as "connecting" the points. Applicant is also in error in stating that Van der wal does not disclose determining ideal positions across more than two frames. Clearly in figures 2A-2D there are four frames shown and they are all aligned to each other even if it is two at a time, the end result is a connection across as many frames as are corrected for positional offset. Claim 20 and corresponding dependent claims are accordingly still rejected below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 20 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,963,675 to van der Wal et al.

With regard to claim 20, van der Wal discloses a method for stabilizing a sequence comprising calculating a first position of a point of interest in a first frame (Fig. 2a and column 6, lines 31-41). The "x" in the frames is considered to be the first position of a point of interest in frame 200 at F(t).

Van der Wal further discloses identifying estimated positions of points of interest in a second frame and a third frame that correspond to the point of interest in the first frame (Fig. 2a and column 6, lines 31-41). The "x" in the frames is considered to be the point of interest displayed in the sequence of frames.

Van der Wal further discloses identifying tracked positions of points of interest in the second frame and third frame based on the estimated positions of the point of interest, wherein the tracked positions comprise a second position for the point of interest in the second frame and a third position for the point of interest in the third frame (Fig. 2a and column 6, lines 31-41). The "x" in the frames is considered to be the feature in the second and third frames shown in elements 200 at $F(t+1)$ and $F(t+2)$.

Van der Wal further discloses after said identifying tracked positions, plotting the first position, the second position, and the third position on an X, Y coordinate graph (Figs. 2a-2b and column 6, lines 42-53).

Van der Wal does not explicitly disclose connecting the first position to the third position to the third position on the X, Y coordinate graph, wherein ideal positions of the point of interest in the first frame, second frame, and third frame lie on the connection. However Van der Wal discloses plotting the points of interest on a common X, Y coordinate plain and using that plot to determine image shift and other stabilization information and the plots are connected in some form to determine movement from one frame to the next (Figs. 2a-2d and column 6, lines 42-53). The order in which the points are connected could obviously vary according to the stabilization effect desired. Therefore it would have been obvious to one of ordinary skill in the art at the time of

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invention to connect or use the spatial relationship between points in the plot of sequential frames as taught by Van der Wal in any order to achieve a desired stabilization effect.

Furthermore in response to applicant's arguments, the term "connecting" here is interpreted reasonably and fairly broadly, especially in the absence of any recited motion trajectory being plotted. Claim 20 only calls for the plotting of tracked positions which is disclosed in Van der Wal's figures 2a-2d. The first and third positions are considered to be "connected" by both being connected to the second position, and the ideal positions are also considered to lie on said "connection." The points are considered "connected" in that they are all used to determine relative placement to one another. It should be noted that no trajectory or even a traced line is recited in the claim as "connecting" the points. Applicant is also in error in stating that Van der wal does not disclose determining ideal positions across more than two frames. Clearly in figures 2A-2D there are four frames shown and they are all aligned to each other even if it is two at a time, the end result is a connection across as many frames as are corrected for positional offset.

With regard to claim 24, Van der Wal discloses determining whether to perform global tracking or matching to generate estimated points of interest (Figs. 2a-2d and column 6, lines 42-53 and Fig.4 and column 7, lines 10-40). Van der Wal discloses how a hierarchy is used to match or correlate the pixel neighborhoods in a pyramid matching sequence.

With regard to claim 25, Van der Wal discloses wherein the determination is based on whether camera motion for the sequence of frames is fast or slow (column 6, lines 16-30). Van der Wal discloses that a determination is made between whether the motion of the image is caused by fast motion or slow motion.

6. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,963,675 to van der Wal et al. hereinafter referred to as Van der Wal 5 in view of U.S. Patent 6,567,574 to Van der Wal et al. herein after referred to as Van der Wal 6.

With regard to claim 21, Van der Wal 5 discloses the method of claim 20, but does not disclose wherein transforming each other frame in a sequence of frames further comprises performing affine transformation using the tracked positions and the ideal positions. Van der Wal 6 discloses affine transformation (column 7, lines 20-25). Van der Wal 6 teaches that affine transformation may be used as a general transformation in aligning frames from video signals in the method of Van der Wal 5. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use affine transformation as taught by Van der Wal 6 in the method of Vander Wal 5 in order to perform general transformation in video frames.

7. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 5,963,675 to van der Wal et al. hereinafter referred to as Van der Wal 5 in view of U.S. Patent 6,567,574 to Van der Wal et al. herein after referred to as Van der Wal 6 and further in view of U.S. Patent 6,459,822 to Hathaway et al.

With regard to claim 22, Van der Wal 5 and Van der Wal 6 disclose performing affine transformation of claim 21, but does not disclose determining values of coefficients representing rotation, scaling, shearing, and/or translation information using the tracked information and the ideal positions. Hathaway discloses a method for stabilizing and registering a video image in multiple video fields and compensating for rotation, magnification (or scale and translation (column 2, lines 49-62). Hathaway also discloses using coefficients as a measure of correlation, which provides a measure of rotation, translation, or magnification (column 6, lines 1-11). Hathaway teaches that the magnification change, translation and rotation information is used to de-magnify, de-translate, and de-rotate the other image frames to give the appearance of the key area being motionless (column 11, lines 26-34). Therefore it would have been obvious to one of ordinary skill in the art at the item of invention to use the magnification, and rotation operations additionally in the translation system of van der Wal in order to give the appearance of the key area being motionless or stable.

With regard to claim 23, Hathaway discloses applying the values of coefficients to each pixel of the first frame to obtain positions of each pixel in the second frame (column 6, lines 1-11). Hathaway discloses that the correlation coefficients are applied to determine how to translate or modify the pixels in the other frames.

8. Applicant's amendment necessitated the grounds of rejection presented in the Office Action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Allowable Subject Matter

9. Claims 1-7, 9-10, 12-19, 26-35, 37-43, 45-54 and 57-62 are allowed.

The following is an examiner's statement of reasons for allowance: Independent claims 1, 26, 41 and 48 have all been amended to include the features of:

...after said determining tracked positions, determining ideal positions for the features in the remaining frames in the group of pictures based on the tracked positions, said determining ideal positions comprises, for each feature:
plotting its position from the first frame and its tracked positions
from the remaining frames in an X, Y coordinate graph; and
drawing a motion trajectory that connects a first plotted position
from the first frame to a last plotted position from a last frame in the group
of pictures, wherein the ideal positions are located on the motion
trajectory;

The reference to Van der Wal teaches determining ideal positions of a tracked object or feature point and correcting for positional offset between frames, but does not explicitly disclose drawing a motion trajectory to connect the first and last point and all the ideal points. None of the other found prior art of reference teaches or fairly suggests these explicitly recited features. Therefore independent claims 1, 26, 41 and 48 are found to be allowable along with their corresponding subsequent dependent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

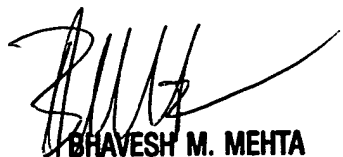
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-2214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wes Tucker

8-24-06


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